

Habitat. WASHINGTON (PACIFIC COUNTY).

Holotype. ♀, ILWACO, June 28, 1925 (Melander).

The reference of this curious fly to *Shannonomyia* Alexander must be held to be somewhat provisional but on the basis of the short subcosta and the loss of cell M_1 , it agrees more closely than with *Limnophila*. The one discordant venational feature is the long *Rs* which is much longer than in the other described Nearctic species. The discovery of the male sex may result in assigning the species elsewhere. The fly is readily told from all other regional species of Hexatomini by the white tarsi, in conjunction with the loss of cell M_1 of the wings.

NOTES ON THE HABITS OF THE PREDATOR CYMATODERA OVIPENNIS SAY WITH A DESCRIPTION OF THE PUPA
(Coleoptera, Cleridae)

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During a study of the aculeate Hymenoptera using the living and dead branches of *Sambucus* for nesting purposes, two beetle larvae were found that proved to be *Cymatodera ovipennis* Say.¹ Blaisdell (1892) has recorded larvae of this species from burrows of the cerambycid *Ipochus fasciatus* in southern California. A summary of the food habits of this species by Böving and Champlain (1920) states that it is "a predator on Lepidopterous larvae infesting cones of *Pinus jeffreyi*; reared from cones of *Pinus ponderosa* and *Pseudotsuga taxifolia*; from Piñon pine infested with *Carphoborus* and *Callidium*." These records on secondary woodboring Coleoptera are similar to those given by the same authors for *Cymatodera undulata* Say, which was subsequently reared by W. V. Balduf (1926) from the bur oak galls made by the cynipid, *Disholcaspis mamma* Walsh. This paper is designed to increase the knowledge of the biology of this species and to illustrate and describe the pupa.

¹ Determination by E. G. Linsley.

LARVA

An excellent description of the mature larva has been given by Böving and Champlain. It will suffice to add that, following ecdysis and in earlier instars, the general body color of the larva is pale rose and the pigmented portions a pinkish violet. In the ultimate and penultimate larvae, the membranous portions of the thorax and abdomen have a distinct greenish color which in Böving and Champlain was described as *clay yellow*. This discrepancy is undoubtedly due to the fact that their description was based on larvae which had been preserved in alcohol.

PUPA (fig. 1)

Head with four spines forming a single row on upper portion of face. Pronotum with a row of ten stamineous spines along anterior margin, five spines along each margin, a series of seven spines just anterior to the mid-line with the two on each side of the center caudad to the rest of the series, an inverted triangle of three spines in the posterior half. Legs with an anterior femoral spine three-fourths of the distance from the base to the apex, each pair also with a spine on the posterior margin of the femur, the intermediate pair of legs with a second adjacent spine. Abdomen with a small group of median lateral spines, a single pair of spines on the posterior margin of each tergite and one on each side of the mid-dorsal line, each pair increasing in length from anterior to posterior.

When first formed, color entirely white, head folded under the prothorax. After seventh day, eyes light brown, head and notum evenly flecked with irregular purple spots, dorsal and lateral margins of abdomen heavily pigmented with purple with the exception of a thin mid-dorsal line which is green, ninth abdominal segment and caudal appendages white. Mandibles, labial palpi, maxillae, maxillary palpi, clypeus, antennae, legs and wings all white until fifteenth day. First brown pigmentation of tips of mandibles on fifteenth day following pupation, tarsal claws pigmented on eighteenth day, mouth parts and all appendages becoming increasingly suffused with brown from twentieth to twenty-fifth day. Emergence on twenty-fifth day.

Judging from the pupal description given by Balduf for *Cymatodera undulata* Say, the spine pattern may prove to be the easiest method of separating pupae of this genus.

Cymatodera ovipennis has been found at elevations of several hundred to seven thousand feet throughout Western North America. The adults are nocturnal and are most frequently taken in light traps or at light during the summer months.

The first two specimens which were encountered in this study were collected in the dead branches of *Sambucus* at Mineralking, Tulare County, California, August 10, 1939, by G. E. Bohart.

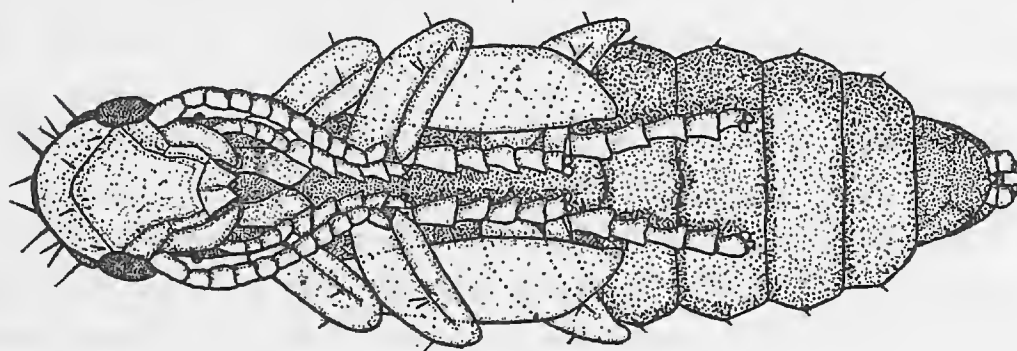


Fig. 1. Pupa of *Cymatodera ovipennis* LeConte, X 6½.

Two larvae were obtained from a total of over three hundred twigs, which were being used by numerous aculeate Hymenoptera for nesting purposes. One had fed on a cell series of *Hoplitis* (*Alcidamia*) sp. and then constructed a resting cell in the pith of the twig to one side of the bees burrow. This larva was placed in a large shell vial with a cork stopper. Within a few days the larva had cut a small circular hole in the cork and hollowed out a pupal cavity. This cell was constructed so as to leave only a very thin, almost membranous, shell of cork separating it from the external environment. Similar behavior was reported by Linsley and MacSwain (1943) for *Trichodes ornatus*. The cork was later split open and reinserted in the vial to allow frequent observations. On each examination the larva became

active but no change was observed for almost two years. Pupation finally occurred on July 9, 1941, and the adult emerged on August 8, 1941. The second larva was found in a twig containing the remnants of a cell series of *Osmia* sp. This larva was provided with a similar environment, but pupation had not occurred by August, 1941, although a larval skin was shed on March 18, 1941. This specimen was killed and preserved for future study.

Other specimens were obtained as follows: one dead adult and larval skins from a dead branch of *Sambucus* containing destroyed cells of *Osmia* sp. at Mt. Diablo, Contra Costa County, California, on July 10, 1940, two larvae (one immature) and one pupa in the dead branches of *Sambucus* containing old cell series of *Ceratina acantha submaritima* (Ckll.) at Kyburz, El Dorado County, California, July 26, 1941, and one dead larva in *Sambucus* containing old series of *Osmia* sp. at Mt. Rose, Washoe County, Nevada, July 27, 1941.

The normal duration of the life cycle of this species remains a matter for conjecture, but from the material at hand, it would seem likely that it involves one or more years, with larval feeding confined to the first year. All attempts to feed larvae after they had constructed their resting cells were unsuccessful.

LITERATURE CITED

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